

the "*Biologia Centrali-Americana*": "The severance of a friendship such as ours had been for forty-four years was a terrible blow to me, for we were more intimately connected than most brothers, and, besides the personal loss, I missed his knowledge and experience in all things connected with our book. . . . It was with a heavy heart that I took up my pen again."

The choice of Central America as the field for their great enterprise was determined by an accident—the search for commercially profitable palm-nuts by Salvin in 1857—but no accident could have been more fortunate, for it hit upon the most interesting and exciting of all links between the tropics and the great northern land-belt. Prolonged isolation has led to the development, upon the great continent to the south, of a fauna unequalled in the world for combined peculiarity and richness. Then, in the fullness of time, the area supporting this teeming and varied population lost its isolation. What more exciting problem than a study of the intermediate tract which would show how far the southern forms have pushed to the north, the northern to the south? We know, as the result of this study, that the boundary between the two areas is concave towards the north, for the lower temperature of the high central Mexican plateau favours the northern forms, while the heat of the lower slopes and flats on the two coasts favours the southern.

It is unnecessary, on the present occasion, to speak in any detail of the sixty-three quarto volumes and 1677 plates in which this splendid contribution to zoology, botany, and anthropology is contained, for an admirable and yet brief statement of the history and scope of the work will be found in Godman's introduction, published in 1916. But a word must be said of the great band of naturalists who gathered round and assisted the two editors. Of this band, some, like H. W. Bates, Albert Günther, Joseph Hooker, O. Pickard-Cambridge, and P. L. Sclater, were veterans in 1879, when the first part appeared, and are now great memories. Others, again, found in the "*Biologia*" the whole of their training, and nearly the whole of their experience, as systematists. It is as Godman and Salvin would have wished, that their memories should always be bound up with those of the great body of experts who laboured with them.

Godman was the most modest of men. He found his reward in his love of the work he had undertaken, and looked neither for honours nor for recognition; but when they came the evidence of appreciation by his scientific comrades was a great pleasure and encouragement to him.

Outside his own subject Godman took a keen interest in all that concerned the advancement of science, and its neglect in this country was a real grief to him. He saw clearly the double importance of science for its own sake and for the sake of the intellectual training it gives. In these essential things he felt strongly that the country was being starved, and he feared for the future when he thought of our politicians and the way

they had accepted their responsibilities in the past.

In failing health at the end of his long life, Godman's interest and sympathy remained unclouded, and in his dying hours he sent a last message to his colleagues giving his opinion on a much-debated subject about which he felt strongly. His last thoughts were with the great National Museum to which he had made so many noble contributions.

E. B. P.

NOTES.

The following fifteen candidates were selected on Thursday last by the council of the Royal Society to be recommended for election into the society:—Prof. F. A. Bainbridge, Dr. G. Barger, Dr. S. Chapman, Sir C. F. Close, Dr. J. W. Evans, Sir Maurice Fitzmaurice, Dr. G. S. Graham-Smith, Mr. E. Heron-Allen, Dr. W. D. Matthew, Dr. C. G. Seligman, Prof. B. D. Steele, Major G. I. Taylor, Prof. G. N. Watson, Dr. J. C. Willis, and Prof. T. B. Wood.

SIR LAZARUS FLETCHER retired on March 3 from the directorship of the Natural History Museum after forty-one years in the service of the Trustees. Previous to his appointment as director on May 22, 1909, he had served two years as assistant and twenty-nine years as keeper in the Mineral Department. As keeper of minerals his first arduous task was to superintend the removal of the mineral collections from Bloomsbury to South Kensington, and to re-arrange them in the Natural History Museum. His next work was the preparation of those admirable guides, the introductions to the study of minerals, rocks, and meteorites respectively, and the selection and arrangement of series of specimens to illustrate them, which have earned him the gratitude of all students of the subject. "The Introduction to the Study of Minerals" is a highly successful attempt on the part of a great mathematician and chemist to surmount the difficulty of explaining a very technical subject without the aid of mathematics and chemical formulæ. In the intervals of this work, and later, Sir Lazarus Fletcher found time, in the chemical laboratory which had been fitted up in the museum, for his well-known researches on meteorites and minerals. After this exacting work as keeper of the Mineral Department, his tenure of office as director of the museum was still not devoid of care, for soon after his accession an attempted encroachment upon the grounds which had been allotted for the future expansion of the museum had to be repelled, and more recently during the war certain proposals which, if carried out, would have been disastrous to the collections had to be met.

A FEW weeks ago (January 23, p. 409) we referred to the approaching retirement of Sir Lazarus Fletcher from the directorship of the Natural History Museum, and the duty thus placed upon the Trustees of finding a successor who will maintain the high prestige of the museum among the corresponding institutions of the world. From the letter which appears in our correspondence columns, signed by twenty-three naturalists of distinguished eminence, it appears that, as a temporary measure, the appointment of an administrative official to the post of director has been contemplated. We can scarcely believe that the Trustees will adopt such a course of action, which would be most derogatory to the position of science and the interests of the museum. The shortness of tenure, and the provision of an increased retiring

pension at the end, are merely matters of expediency, and are as nothing by the side of the principle and precedent involved. Scientific men should not for a moment accept the view that they are incapable of administration, or that the high posts which their knowledge qualifies them to fill can be occupied efficiently by administrators not possessing it. Skilled secretarial work, no doubt, facilitates communication between Government Departments, but it signifies routine and stagnation when it controls the activities of a scientific institution. Knowledge gives the driving power required for progressive development, and administrative functions should be subsidiary to it. Throughout the Civil Service there is already far too much of the reverse condition. We are glad, therefore, that a strong protest has been made against the assumption that the highest post open to naturalists in this country can be filled by an officer without the necessary scientific qualifications to do credit to it and the nation in the eyes of the world.

THE facts made known by Lord Gainford and Lord Harcourt in the House of Lords on February 26 show that a long time must elapse before our museums and the staff of the Board of Education can resume their work unhindered. The latter body is scattered throughout London, while its records are stored in the galleries of the Victoria and Albert Museum. Half that museum is closed to the public, its circulation department shut down, its textile classes and other aids to industry suspended. The priceless Wallace collections are still in underground tubes. The National Portrait Gallery, the London Museum, the Tate Gallery, and the British Museum galleries of prints and of Egyptian and Assyrian antiquities, as well as much of its storage space, are occupied by huge clerical staffs. Finally, the exhibition galleries of the Imperial Institute continue to be filled with a succession of other Departments; the institute's lectures and demonstrations are in abeyance, and its own research work is hampered because the raw materials are stored elsewhere. The result is not only to disappoint the American and Dominion troops, and to deny the British taxpayer the enjoyment of his great educational establishments; it is, above all, a serious check on the commercial and industrial development of the country. Unavoidable the delay may be, yet we cannot help feeling that the situation would not have arisen had Ministers a truer appreciation of the work done by and in our public museums.

THE KING has consented to act as patron of the British Scientific Products Exhibition, 1919, which will be held at the Central Hall, Westminster, during the month of July. The president of the exhibition is the Marquess of Crewe, and the vice-presidents include the Prime Minister and all the leading members of the Government. Prof. R. A. Gregory is chairman of the organising committee. The British Science Guild has been encouraged to organise this exhibition by the success which attended that held at King's College last summer and the more recent exhibition at Manchester. Now that many inventions can be shown which could not be put before the public during the war, there is every prospect that this year's exhibition will be even more successful than its predecessors. The objects of the exhibition will be to illustrate recent progress in British science and invention, and to help the establishment and development of new British industries. Such an exhibition will enable new appliances and devices to be displayed before a large public, and will provide progressive manufacturers with an opportunity of examining inventions likely to be of service to them, thus serving as a kind of clearing-house

for inventors and manufacturers, as well as illustrating developments in science and industry. The exhibition will include sections dealing with chemistry, metallurgy, physics, agriculture and foods, mechanical and electrical engineering, education, paper, illustration and typography, medicine and surgery, fuels, aircraft, and textiles. Firms desirous of exhibiting are invited to communicate with the organising secretary, Mr. F. S. Spiers, 82 Victoria Street, London, S.W.1.

At the forty-first annual general meeting of the Institute of Chemistry held on Monday, March 3, Sir Herbert Jackson, the president, referred to the work of the institute during the war. The record afforded an example of the value to the country of organised professional bodies in times of crisis. The institute is now co-operating with the Appointments Department of the Ministry of Labour in the resettlement in civil life of those who have been so engaged, and it is hoped that with the return of more normal conditions chemists will be utilised to the fullest advantage in the application of their science to the industries of the country. The president, in referring to the losses sustained by the profession, mentioned especially Lt.-Col. E. F. Harrison, who will always be remembered for his exceptional work in the provision of means of defence against poisonous gas attacks, in which work he undoubtedly sacrificed his life. The institute has before it a period of reconstruction, and will endeavour to bring together in one body the trained and competent chemists both for their own benefit and for that of the community. The events of the war have done much to establish the claim of chemists to greater recognition than has been accorded them in the past. The council has recently prepared a scheme of Government Chemical Service, which it is hoped will secure better conditions for chemists holding appointments under various Departments. The vital importance of chemical service to the State has been clearly demonstrated in recent years, and a good example set by the Government will go far to bring home to the public the importance of chemistry to industry and commerce. Sir Herbert Jackson was re-elected president of the institute for the ensuing year.

WHEN the Ministry of Health Bill passed its second reading in the House of Commons on February 26 Major Astor, Parliamentary Secretary to the Local Government Board, who replied on the debate, expressed gratification that a first-class measure had practically secured unanimous support from all parts of the House. From all accounts this is exactly what happened, and, apart from certain of the Welsh members, who desire to see separate provision made for the Principality, and some of the Irish members who do, and some who do not, wish to see the proposed Bill extended to Ireland, there were few voices raised in criticism. Clearly the majority had come to the second reading convinced that the Bill was the best likely to be obtained, and prepared to support it and accept all it proposed in the way of transference of powers, consultative councils, etc. Dr. Addison's advocacy, sound though it was, apparently was also quite dispassionate. His attitude suggested that he was addressing the members of a learned society and engaged in reading a paper upon a scientific subject. This impression was heightened by the fact that a large proportion of those who took part in the debate were medical men. These, led by Sir Watson Cheyne, devoted themselves largely to the question of research and the provision in clause 3 for placing this most important work in the hands of the Privy Council. It is interesting to note that, not only inside the House,

but also outside, and particularly amongst medical officers of health, whose society has issued a memorandum dealing with the Bill, medical opinion is strongly against any Department other than the Ministry of Health having control of research. In regard to the failure of the Bill to provide for the taking over by the Ministry of lunacy and mental deficiency there was comment also, and here again medical opinion is in favour of transference. As Dr. Addison pointed out, however, there was much detail that must be left to the future. The main and pressing business of the moment is to get the Ministry formed and to see that the definite fundamental health matters are brought within its purview. Other things will follow when the Ministry and the Minister have shown themselves worthy of the trust which everybody seems to be so willing to give them and of the high hopes that are based upon them.

CAPT. G. P. THOMSON will deliver his postponed lecture on "The Dynamics of Flying" at the Royal Institution on Monday next, March 10, at 3 o'clock.

THE death is announced, at eighty-five years of age, of Dr. Robert Liveing, consulting physician to the skin department of the Middlesex Hospital, and formerly lecturer on anatomy at Middlesex Hospital.

WE regret to announce the death on February 8, at ninety-four years of age, of Prof. J. J. T. Schlösing, doyen of the section of rural economy of the Paris Academy of Sciences, and professor of agricultural chemistry in the Paris Conservatoire des Arts et Métiers.

Science for February 7 announces that Major C. E. Mendenhall, professor of physics in the University of Wisconsin, has been appointed scientific attaché to the United States Legation in London, and has been given leave of absence from the University to take up the duties of this post immediately.

At the ordinary meeting of the Royal Society of Edinburgh, held on March 3, the following were elected ordinary fellows:—Dr. A. R. Cushny, Dr. W. J. Dunder, Dr. R. O. Morris, Dr. T. S. Patterson, Mr. B. D. Porritt, Mr. A. H. Roberts, Mr. W. A. Robertson, Dr. A. Scott, Dr. A. R. Scott, Mr. W. W. Smith, and Capt. D. A. Stevenson.

THE following lectures will be delivered at the Royal College of Physicians during March and April:—Milroy lectures, *Half a Century of Smallpox and Vaccination*, Dr. John C. McVail; Goulstonian lectures, *The Spread of Bacterial Infection*, Dr. W. W. C. Topley; Lumleian lectures, *Cerebro-spinal Fever*, Sir Humphry D. Rolleston.

THE Paris correspondent of the *Morning Post* announces the death, at sixty-eight years of age, of Prof. André Chantemesse, professor of hygiene in the faculty of medicine in Paris, member of the Academy of Medicine, and Inspector-General of Sanitary Services. Prof. Chantemesse was the author of works on typhoid fever, and others entitled "*Moustiques et Fièvre Jaune*," "*Mouches et Choléra*," and "*Frontières et Prophylaxie*."

At a special general meeting of the British Psychological Society held in London on February 19 it was unanimously resolved that persons interested (instead of, as heretofore, engaged) in the various branches of psychology shall be eligible for membership. It was also decided to institute three special sections of the society, devoted respectively to the educational, industrial, and medical aspects of psycho-

logy. Further particulars may be obtained from the honorary secretary of the British Psychological Society, the Psychological Laboratory, University College, W.C.1.

It is with regret we record that Capt. Melville Willis Campbell Hepworth, Marine Superintendent of the Meteorological Office, died at his residence at Ealing on February 25. Capt. Hepworth was in his seventieth year, and had held his official position since 1899. He was a Younger Brother of Trinity House, and received his C.B. in 1902 at the coronation of King Edward VII. The Monthly Meteorological Charts of the North Atlantic and Mediterranean, as well as of the East Indian seas, were initiated during his tenure of office, and the later editions of "The Barometer Manual for the Use of Seamen" and the "Seaman's Handbook of Meteorology" were compiled under his direction, and attained a large circulation. Capt. Hepworth was much interested in marine biology and in the temperature and salinity of the sea. Prior to his association with the Meteorological Office he was in command of mail steamers trading to the Cape and Australia, and later of vessels engaged on the Canadian-Australian steam route. For many years while at sea he made a study of meteorology which prepared him for his official position.

SIR ANDREW FRASER, K.C.S.I., whose death has recently been announced, was the son of a missionary and one of the many Scottish Presbyterians who have been distinguished members of the Indian Civil Service, and began his work in India in 1871. He served with distinction in the Central Provinces, and in 1903 was appointed Lieutenant-Governor of Bengal. He was in some ways unsuited for this difficult office, because he was unacquainted with the Bengali character, and was not qualified to deal with the organised resistance against the partition of the Provinces. While his policy of attempting to conciliate the revolutionary party, as is usual in India, served only to encourage anarchism, he met with courage at least five attempts against his life. Sir Andrew Fraser was a typical official of the secretariat type, and beyond his official duties his interests were limited, as is shown by the account of his experiences in his book "*Among Indian Rajahs and Ryots*," which, while interesting as a record of his official life, is lacking in first-hand knowledge of the ethnology, religions, customs, and manners of the races of India.

It is reported from Ottawa that Mr. S. Storkerson, of the Canadian Arctic Expedition, with his party of five men, safely reached the Alaskan coast on November 19 last. When Mr. Stefansson was incapacitated by illness in December, 1917, and had to return to civilisation, his place was taken by Mr. Storkerson, who immediately made preparations for a journey from the coast of Alaska northward over the ice of the Beaufort Sea. He left Cross Island in about long. 146° W. on March 15, 1918, with a large party, including several Eskimo. When about two hundred miles north of the coast he sent back several of his men, and with the remainder continued his journey, expecting to be carried westward with the ice to the coast of Siberia. Practically no provisions were carried, the party relying on seal-meat and polar bears, as had been done in all the journeys of the Stefansson expedition. Contrary to expectations, based on the drift of the *Karluk* and other evidence, the ice did not move westward, but drifted around in a great eddy. The most northerly point reached was lat. 74° N., long. 152° W., in a part of the Arctic Ocean not previously explored. The problematical Keanan's

Land, which appeared in many maps in about lat. 74° N., long. 140° W., does not exist.

PROF. ANDREW MELVILLE PATERSON, who died after a brief illness on February 13 at the age of fifty-six, held a conspicuous place amongst modern British anatomists. Graduating in medicine at Edinburgh University in 1883, Prof. Paterson served his anatomical apprenticeship as a demonstrator in the dissecting-rooms of Edinburgh University under Sir Wm. Turner, and afterwards in Owens College, Manchester, under Prof. Morrison Watson. In 1888 he was invited to become the first occupant of the chair of human anatomy in University College, Dundee, and after labouring there for six years was elected to the Derby chair of anatomy in the University of Liverpool, a position which he occupied with distinction until his death. His intense public spirit led him to offer his services to the Medical Department of the War Office soon after the war commenced, and there is no doubt that his arduous duties as Assistant Inspector of Military Orthopædic Hospitals were accessory to his sudden and premature death. As an anatomist Prof. Paterson will be remembered for his contributions to our knowledge of the basal pattern in which nerves are distributed to the body, and particularly to the limbs, of vertebrate animals. That was the subject which first attracted his attention; his investigations led him on to an examination of the segmental character of the vertebrate body, particularly the variations which attend the segmentation of the sacral region. Most of his researches were published in the *Journal of Anatomy and Physiology*—now the *Journal of Anatomy*—but his monograph on "The Human Sacrum" appeared in the Transactions of the Royal Dublin Society (vol. v., 1893). In 1903, as a Hunterian professor at the Royal College of Surgeons of England, Prof. Paterson gave a series of lectures on "The Morphology of the Sternum," which was published in book form in the following year. In these lectures he maintained that the sternum must be regarded as a derivative, not of the ribs, but of the shoulder-girdle. He was also the author of several brochures on anatomy and embryology, as well as a contributor to standard text-books on human anatomy. Some of the essays which he printed for private circulation were pieces of real literature.

MR. E. H. STENNING, King William's College, Isle of Man, sends a description of a brilliant auroral display seen there on February 27. The luminous areas appeared at about 8.30 p.m., and increased in intensity until 10.10 p.m. They took the form of two large parallel arcs, extending across the northern sky. The brighter of the two bands, the inner, was so bright that no star appeared to shine through it. It was separated from the outer arc by a broad black band. The inner band seemed to be of fixed intensity, but the outer varied incessantly. In altitude the highest portion of the outer band was well above the central star of Cassiopeia, and the brightest portion of the band was about 4° below the lower stars of this constellation (10.10 p.m.). The luminosity of the outer band faded rapidly, beginning from the ends, and at 10.45 could not be seen. The inner band was still visible, though faintly, at 11.15.

INFLUENZA has again further increased in severity over the British Isles, and the Registrar-General's return for the week ending February 22 shows that the deaths in London and in the ninety-six great towns of England and Wales were more than double those of the preceding week. In London (county) the deaths from influenza were 653, which is greater

than in any week since that ending December 7, and the deaths in the ninety-six great towns were 3046. The deaths from influenza in London had risen from 13 per cent. of the deaths from all causes in the preceding week to 25 per cent. in the week ending February 22. The deaths are still highest at the ages from twenty to forty-five, being 44 per cent. of the total, and there is some increase in the percentage of deaths above sixty-five years. Out of 12,939 deaths in London from influenza during the last twenty weeks there have been 5987 deaths at the ages twenty to forty-five, which is 46 per cent. of the total deaths from the epidemic. At the ages up to five years there were 12 per cent. of the total deaths, at five to twenty years 16 per cent., at forty-five to sixty-five years 17 per cent., at sixty-five to seventy-five years 6 per cent., and above seventy-five years only 3 per cent.

MR. J. REID MOIR describes in the February issue of *Man* a remarkable piece of carved chalk recently found by the Hon. R. Gathorne-Hardy in his park at Great Glemham House, Saxmundham, Suffolk. The specimen, measuring $4\frac{1}{2}$ in. by $2\frac{1}{2}$ in. by $2\frac{3}{8}$ in., is of a dull white colour, and has sandy material embedded in the interstices. It is believed that it was brought to the surface by the action of rabbits, the burrows of which are very numerous at Great Glemham. Mr. Moir believes that, in its outline, the piece of chalk bears a very close resemblance to the outline of the mammoth (*E. primigenius*), with which the scientific world has become familiar by an examination of carcasses of this animal found in the frozen ground of Siberia, and by drawings and outlines upon bone and other materials discovered in the Aurignacian and later Palæolithic deposits in France and elsewhere. The specimen certainly exhibits many remarkable points of resemblance to the mammoth, but the question remains whether these resemblances may not be accidental or the result of weathering. It may be advisable to await further examination by experts before we express a decided opinion upon this remarkable discovery.

WE have received a copy of the first issue of the *Balkan Review*, which is to be published monthly by the Rolls House Publishing Co. at the price of 1s. 3d. The editor is Mr. Crawford Price. The review aspires to cultivate financial and commercial relations between Britain and the Balkans, and to act as an organ of *liaison* between the West and the East. Its scope covers social, political, historical, and geographical aspects of Balkan lands. "While supporting the existing *entente* between Greece, Serbia, and Rumania, we shall hold the door ever open for the admission of a regenerated and reformed Bulgaria." The first number contains several interesting articles, including one on the Jugo-Slavs and another on the group of islands known as the Dodecanese.

THOUGH for skeletonising purposes the use of the tryptic digestion process has long been known, the method does not appear to have been much used in England. Miss Kathleen F. Lander directs attention to its great value in the *Museums Journal* for February. She finds that half a gram of trypsin in a litre of water makes the best solution, and to this is added a pinch of sodium bicarbonate to ensure alkalinity. If allowed to digest at a temperature of 37° C., the preparation of a skeleton can generally be completed within twenty-four hours. The method is superior to maceration in warm water only in so far as rapidity of action is concerned, and it is certainly costly. Trypsin—sold by Messrs. Burroughs and Wellcome—costs 50s. per ounce, and the solu-

tion, when ready for use, is. per litre. Fortunately, however, it retains its digestive action for a fortnight before the ferment is destroyed by bacteria, but its action becomes slower and slower.

In the *Gardeners' Chronicle* of February 8 Mr. W. B. Brierley, writing from the recently established Institution of Pathological Research, Rothamsted, discusses the question of the diseased areas on orchid-leaves known to horticulturists as "orchid spot." This, he points out, is not a single and specific disease, but a congeries of diseases, all little understood and urgently in need of detailed investigation. From the casual examination of diseased specimens during the past two or three years Mr. Brierley has recognised seven distinct types of disease. Of these it is highly probable that four are the result of the action of parasitic organisms, one of local chilling of the leaf-tissues, one probably of atmospheric poisoning, and one of some other physiological derangement of the protoplasm, due probably to unsuitable cultural conditions in the plant's physical environment. A continuous and intensive study of "orchid spot" would doubtless show that the seven diseases are but a few of the many covered by this name. At present all these diseases are lumped together as "orchid spot," and horticulturists endeavour to control a disease of physical causation by a fungicidal spray, or a fungal epidemic by regulating to a nicety the temperature of the water supply. There is needed a detailed investigation of this group of diseases, a critical experimental study of the physiological relations of the plants to their environment, an understanding of all the complex hygienic factors involved, and a thorough elucidation of the life-histories and biological relations of the pathogenic organisms which may be present. Only on such a foundation can a rational scheme of prophylactic and therapeutic treatment be based.

THE Monthly Meteorological Chart of the East Indian Seas for February, issued by the Meteorological Office, shows in great detail the various meteorological data. Winds are given in an extremely intelligible and useful form for navigators, and aircraft can use much which has been primarily prepared for the seaman. The wind-zones show for each 5° of latitude by 5° of longitude both frequency and strength. The limits of the trades and monsoons are shown on the face of the chart, and tracks of some cyclonic storms are given. Results for the several elements are obtained from records extending over a period of about sixty years. Ice information is given on the back of the chart, and navigators voyaging in high southern latitudes will find the information very helpful in avoiding a common source of danger. There is a desire on the part of the Meteorological Office for captains who are interested in meteorology to assist in the work by observing for the Office. Naturally, the organisation has been seriously interrupted by the war, so that the assistance of voluntary observers is now the more urgent. The series of charts for the several months shows in the clearest possible manner the change of monsoon over the area of the sea embraced.

OUR ASTRONOMICAL COLUMN.

THE ORDER OF THE PLANETS.—In the oldest cuneiform inscriptions the planets are given in the order Jupiter, Venus, Saturn, Mercury, Mars (*vide* "Encycl. Brit.," eleventh edition, vol. ii., p. 796, "Astrology"). Dr. Herbert Chatley writes from Shanghai to point out that if we calculate the total gravitational force between the sun and each planet (*viz.* product of

masses ÷ square of distance) we obtain results which in order of magnitude agree with the list above. With the latest values of the planetary masses the numbers are:—

Mercury, 0.24.
Venus, 1.58.
(Earth, 1.00.)

Mars, 0.05.
Jupiter, 11.76.
Saturn, 1.04.

This cannot be anything more than a coincidence, but it is sufficiently curious to justify mention. Dr. Chatley notes that if by chance the ancients had possessed the necessary knowledge, they would have grouped the planets, not by the simple attractions, but by their tide-raising power, which would have involved the inverse cubes of the distances.

CEPHEID VARIABLES.—The *Observatory* for February contains a letter by Mr. J. H. Jeans on the Cepheid problem. Mr. Jeans gives the following functional formula for the Cepheid light variation:—

$$a \cos nt + bf[n(t-\eta)],$$

where a , b , η are adjustable constants, and f is the same function for all stars. The spectral type follows the second term of the expression fairly closely, maximum value of f corresponding with early or B type, minimum value with late or K type.

The graph of the function f shows a steep rise followed by a much less steep and approximately exponential descent; its period is the same as that of the first term in the formula. This latter fact leads the author to the conjecture that the $a \cos nt$ term arises from the rotation of a single elongated body, and the bf term from an explosion which occurs in a particular orientation of the body, this explosion producing the change in spectral type. He shows that Mr. Phillips's Group I. of light-curves would be explained by one explosion per rotation, and Group II. by two explosions per rotation. There is, however, a difficulty in picturing a mechanism that could produce explosions in fixed orientations, for any external disturbing body would necessarily be changing its orientation.

VARIATION OF LATITUDE.—The observatories of Mizusawa, Carloforte, and Ukiah (all in N. lat. 39° 8') continued their series of latitude observations throughout 1917. The results are discussed by B. Wanach in *Ast. Nach.*, No. 4969. The minimum latitude in the meridian of Greenwich was $-0.14''$ at the end of March, the maximum $+0.16''$ early in November. The track of the pole is considerably more contracted than in the two preceding periods.

Issei Yamamoto contributes a paper on the "Kimura" or "z" term in the latitude variation (*Proc. Tokyo Math. Phys. Soc.*, second series, vol. ix., No. 17). He has made observations to test Prof. Shinjo's suggestion that the term arose from an annual term in the distribution of temperature in and above the observing-room, and consequent dissymmetry in the refraction.

He made a specially designed observing-room, with precautions to equalise the temperature of the air above it, and found that the "z" term was greatly reduced. His results thus tend to confirm Shinjo's suggestion.

The values of the variation of latitude that are adopted for the Greenwich reductions are deduced from the results obtained with the Cookson floating telescope. They are ready long before the publication of the results at the international stations, and it is found that they do not differ much from the latter.